



Fact Sheet

A collaborative effort between the Air Force Institute for Operational Health, the Deployment Health Clinical Center, the Deployment Health Support Directorate, the Navy Environmental Health Center and the U.S. Army Center for Health Promotion and Preventive Medicine

Acinetobacter Infections

Information for Clinicians

March 23, 2005

Summary of Key Messages

- *Acinetobacter* bacteria are common in a hospital environment but are rarely a medical threat to healthy, uninjured persons.
- *Acinetobacter* can be acquired by person-to-person contact, through contact with contaminated surfaces, or as a result of wounds contaminated with dirt and debris.
- Some types of *Acinetobacter* are resistant to antibiotics, can cause severe infections, and are especially difficult to treat if they result in bloodstream infections.
- Persons most at risk of difficult-to-treat *Acinetobacter* infections are those who are very ill, are immunocompromised, have traumatic wounds, or are treated in intensive care units.
- Frequent hand washing, gloving, and disinfection of medical facilities and equipment are effective ways for clinicians to avoid spreading *Acinetobacter*.

What is *Acinetobacter*?

Acinetobacter (a-sin-EE-toe-back-ter) species are oxidase-negative, non-motile bacteria which appear as Gram-negative coccobacilli in pairs under the microscope although the Gram stain can vary and appear Gram-positive. Identifying the different species of this genus can be difficult. There are at least 25 different types of *Acinetobacter*. These bacteria are widely found in nature, mostly in water and soil. The organisms have also been isolated from skin, throat, and various other sites in healthy people. *Acinetobacter baumannii* is the type that is most often associated with hospital-acquired infections.

How do patients contract *Acinetobacter* infections?

Wounds can be contaminated with dirt and debris containing *Acinetobacter* bacteria at the time of injury in temperate climates. *Acinetobacter* is usually a hospital-acquired organism, particularly prevalent in intensive care units. Transmission most commonly occurs by contact with the hands of health care workers or from environmental reservoirs. There is no evidence that *Acinetobacter* is being used as a biological warfare agent.

In hospitals, these organisms have been identified in humidifiers, ventilator equipment, wound irrigation equipment, the hands of health care personnel, mattresses, pillows, and other materials and equipment. *Acinetobacter lwoffii* has been reported to survive up to 21 days on dry surfaces and *Acinetobacter baumannii* up to 32 days. *Acinetobacter*'s persistence on environmental surfaces contributes to its nosocomial pathogenicity in hospitalized patients.

Acinetobacter may be seen as a part of common skin flora. About a third of healthcare workers have been found to carry gram-negative rods on their hands. Its persistence on dry surfaces, along with its presence on the skin of healthcare professionals, contributes to transmission among patients. *Acinetobacter baumannii*, however, is rarely seen on normal human skin outside of a health care environment. In health care settings, colonized and infected patients are often sources of *Acinetobacter baumannii* infections. Therefore, to prevent or minimize potential outbreaks, it is essential to maintain good infection control measures and to be aware of the potential for infection – especially in ICUs.

What types of infections does *Acinetobacter* cause?

Infections caused by *Acinetobacter* in the general population (i.e., community acquired infections) are very rare. *Acinetobacter* can cause pneumonia (which usually occurs as outbreaks), skin and wound infections, urinary tract infection, central nervous system infections, and bloodstream infections. Mortality associated with these infections is possible. While unusual, bloodstream infections caused by *Acinetobacter baumannii* tend to be the most severe.

What are the symptoms of an *Acinetobacter* infection?

Symptoms will vary depending on the specific part of the body that is affected. These infections will be clinically indistinguishable from infections caused by other gram-negative bacilli.



How are *Acinetobacter* infections diagnosed?

It can be difficult at times to differentiate colonization from infection; and infection control and infectious disease specialists can provide clinical assistance. Infection should be treated; colonization should not. Standard clinical criteria should be used to establish the diagnosis of infection. If clinical evidence of infection exists, cultures should be obtained as clinically indicated. *Acinetobacter* can be readily grown and identified by standard culture techniques. The medical workup may include cultures, antimicrobial susceptibilities, and gram stains of appropriate clinical specimens.

Risk Factors: These include severity of illness, previous infections or sepsis, prolonged mechanical ventilation, prior antimicrobial therapy, prior colonization with *Acinetobacter*, and prolonged stay in an intensive care unit – especially one with a known *Acinetobacter* problem.

Laboratory: A blood cell count is nonspecific and leukocytosis is not a universal clinical feature of infections with *Acinetobacter*. The organism may be cultured from routine clinical specimens, cerebrospinal fluid, blood, respiratory secretions, peritoneal fluid, wound exudates, or urine.

Imaging: Chest radiograph and CT scans are useful in defining the extent of a nosocomial infection by any organism or to rule out other causes of the patient's symptoms.

Other tests: These tests would be related to the organ system involved.

Culture results should be interpreted carefully. Colonization with *Acinetobacter* occurs on skin, wounds, and respiratory epithelium. Cultures identifying *Acinetobacter* in the absence of clinical signs of infection may represent colonization, which does not warrant treatment.

How are *Acinetobacter* infections treated?

Infections with *Acinetobacter* are treated with antibiotics and with other supportive care using all available clinical and laboratory information and expertise. Surgeon General's Advisors for Infectious Diseases

and laboratory medicine and preventive medicine and infection control experts are available through the respective medical services for consultation. Detailed information about ongoing military medical investigations is available via password protected intranet <https://geis.fhp.osd.mil>.

Other strains, such as *Acinetobacter baumannii*, are resistant to many of the antibiotics commonly used.

Treatment should be based on susceptibility test results. Most *Acinetobacter baumannii* are susceptible to carbapenems (imipenem and meropenem), amikacin, and colistin. Other treatment options to which a bacterial isolate may be shown to be susceptible by *in vitro* testing might include iperacillin/tazobactam, most third-generation cephalosporins, aminoglycosides, and fluoroquinolones.

How many severe *Acinetobacter* infections have affected U.S. Servicemen and women?

As of August 31, 2004, 102 patients who served in Operation Iraqi Freedom and Operation Enduring Freedom have been identified with *Acinetobacter* bloodstream infections. About three out of five of the total were the result of trauma. The number of soft-tissue and wound infections has been roughly ten times the number of *Acinetobacter* infections.

How can *Acinetobacter* infection be prevented?

Isolation and infection control procedures such as hand washing and wearing of gowns and gloves by those who have contact with infected patients should be used to prevent transmission to others in medical treatment facilities. Patient rooms and medical equipment may need to be disinfected aggressively and high touch surfaces disinfected more often. Some equipment may need to be dedicated and not shared. Laundry should be cleaned thoroughly before further contact.

Visitors coming into contact with *Acinetobacter*-infected patients should wash their hands thoroughly before entering and leaving the room to avoid spreading the bacteria



Where Do I Get More Information?

**Air Force Institute for
Operational Health (AFIOH)**
Phone: (888) 232-3764

<http://www.brooks.af.mil/afioh/>

**DOD Deployment Health
Clinical Center (DHCC)**
Phone: (866) 559-1627
<http://www.pdhealth.mil/>

**DOD Global Emerging
Infections Surveillance and
Response
System (GEIS)**
Phone: 301-319-9072
<http://www.geis.fhp.osd.mil>

**DOD Deployment Health Support
Directorate (DHSD)**
Phone: (800) 497-6261
<http://www.deploymentlink.osd.mil>

**Navy Environmental Health Center
(NEHC)**
Phone: (757) 953-0700
<http://www-nehc.med.navy.mil>

**U.S. Army Center for Health Promotion and Preventive
Medicine (USACHPPM)**
Phone: (800) 222-9698
<http://chppm-www.apgea.army.mil>

Centers for Disease Control and Prevention
http://www.cdc.gov/ncidod/hip/ARESIST/acin_general.htm

**CDC: Morbidity and Mortality Weekly Report, 2004
(November 19, 2004) Volume 53 (No. 45); 1063-1066**
Available at:
<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5345a1.htm>

